

# Swift Ultra Long Endurance (SULE) Unmanned Air Vehicle (UAV), Phase I

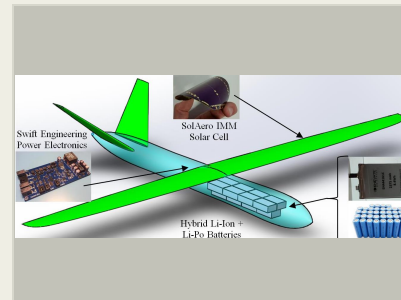
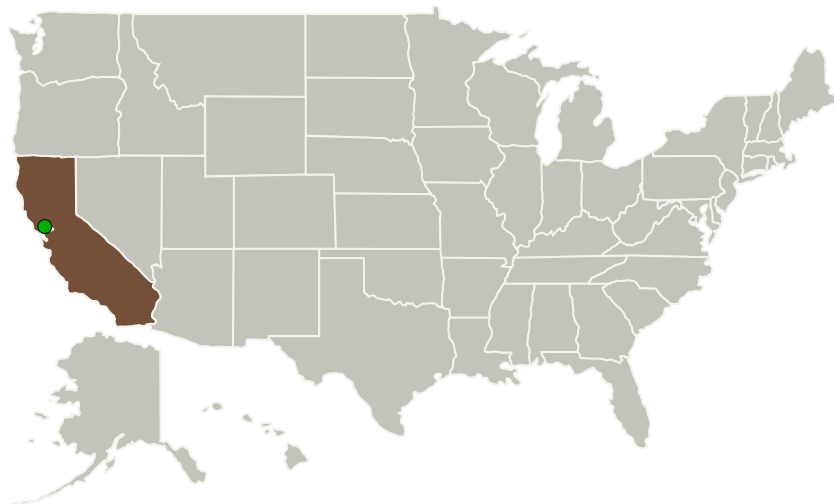
Completed Technology Project (2016 - 2016)



## Project Introduction

Ever since UAV's emerged as a reliable science instrument, the technology has been used to augment satellites, balloon flights, and provide spatial/resolution data that falls between cost-effective manned flights and satellite data. Only recently has a 10-12 hour UAV been considered reliable enough to move closer to the ultimate goal of UAV's, which is ultra-long duration (month-long or more) sustained flight without any human intervention. Helios, Airbus, Titan, Facebook, and the PUMA UAV's have already helped push the boundaries of ultra-long endurance UAV's, however, focusing on specific power (Wh/kg - the ratio of power, time and mass) may provide NASA with a new solution. Swift Engineering is proposing a solution that is optimized at the subsystem (solar cell, batteries, power management) and at the system level. It utilizes the highest specific power technologies and provides substantial test data to back up power analysis for Phase II. Swift's long heritage developing UAV's, since 2001, with the Bat and now the X-Blade platforms make Swift an unique NASA partner for this technology demonstration. Swift has 15 years of experience to leverage in designing UAV's, solar cell integration, designing solar arrays, designing of power electronics, and testing batteries. This combined with heritage programs will allow Swift to quickly optimize the aircraft for Phase II.

## Primary U.S. Work Locations and Key Partners



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## Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

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Organizations Performing Work	Role	Type	Location
Swift Engineering, Inc.	Lead Organization	Industry	San Clemente, California
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

## Primary U.S. Work Locations

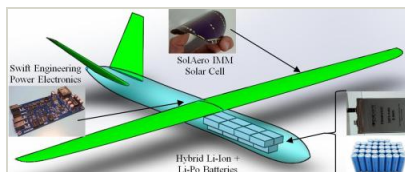
California

## Project Transitions

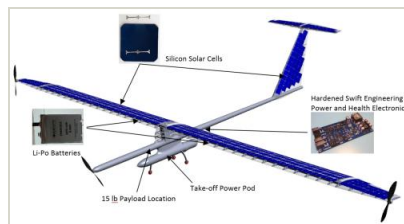
**June 2016:** Project Start**December 2016:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/141058>)

## Images

**Briefing Chart Image**

Swift Ultra Long Endurance (SULE) Unmanned Air Vehicle (UAV), Phase I  
(<https://techport.nasa.gov/image/130279>)

**Final Summary Chart Image**

Swift Ultra Long Endurance (SULE) Unmanned Air Vehicle (UAV), Phase I Project Image  
(<https://techport.nasa.gov/image/128163>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Swift Engineering, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

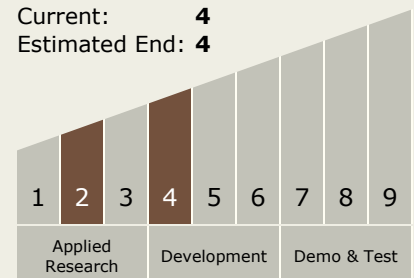
Carlos Torrez

**Principal Investigator:**

Andrew Streett

## Technology Maturity (TRL)

Start: 2  
Current: 4  
Estimated End: 4



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## Technology Areas

### Primary:

- TX01 Propulsion Systems
  - └ TX01.4 Advanced Propulsion
    - └ TX01.4.1 Solar Sails

## Target Destinations

The Sun, Earth, The Moon,  
Mars, Others Inside the Solar  
System, Outside the Solar  
System